



Pediatric Tracheostomy

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Conflict of Interest Disclosures for Carrie Keizer

Grant/Research Support	Nothing to disclose
Consultant	Nothing to disclose
Speakers Bureau	Nothing to disclose
Stock Shareholder	Nothing to disclose
Other (identify)	Nothing to disclose

Disclaimer

This clinical care guideline is meant as a guide for the healthcare provider, does not establish a standard of care in legal matters, and is not a substitute for medical judgment which should be applied based upon the individual circumstances and clinical condition of the patient.

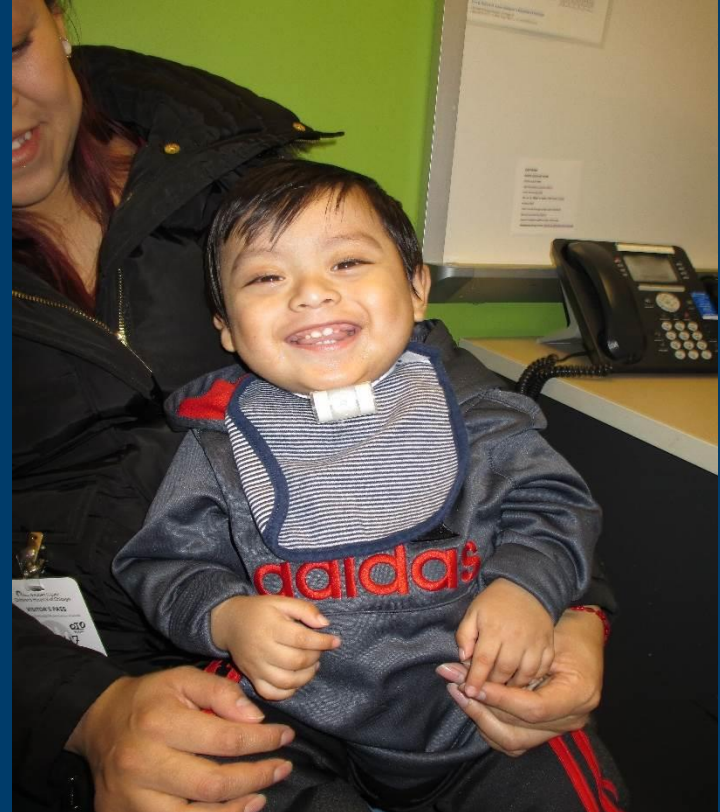
Objectives

1. Identify indications for tracheostomy
2. Describe medical interventions for a child with a tracheostomy
3. Discuss and practice emergent interventions for children with tracheostomies

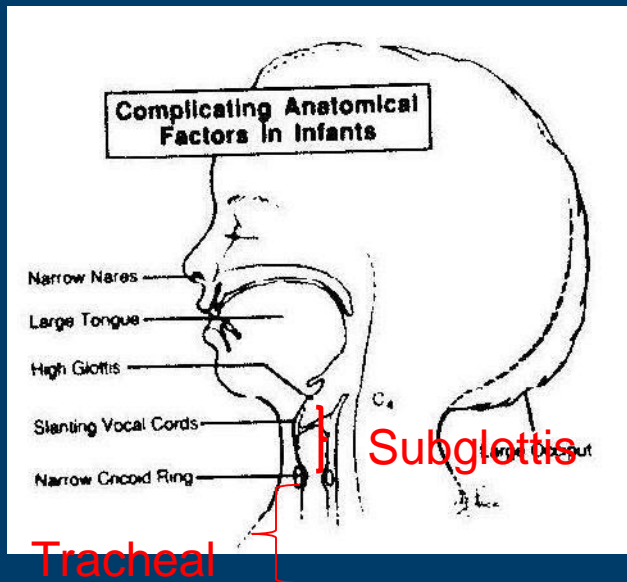


Indications for Tracheostomy

- Primary indications
 - Congenital lesion/malformation
 - Long term intubation and ventilation
 - Upper airway obstruction
- Secondary indications
 - Pulmonary toilet
 - Protected airway

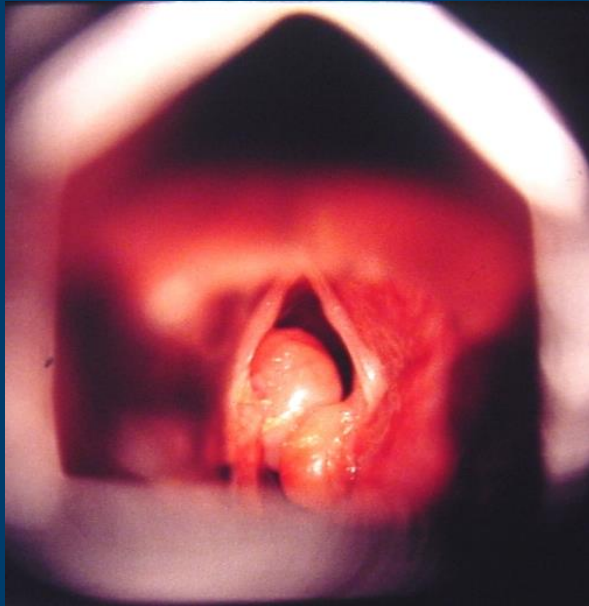


Congenital Lesions/ Malformations



- Subglottic stenosis - congenital
- Tracheal stenosis- congenital
- Vocal cord paralysis
- Laryngomalacia
- Lymphatic malformation

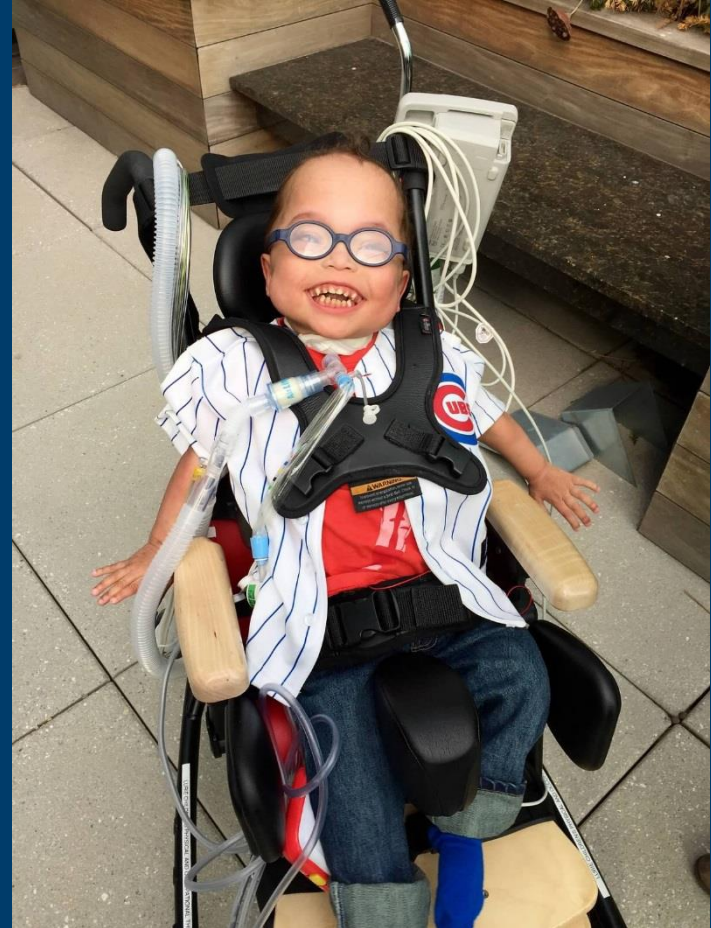
Acquired Malformations



- Internal laryngeal trauma
- External laryngeal trauma

Long term intubation and ventilation

- Obstructive Sleep Apnea
- Congenital Central Hypoventilation Syndrome
- Tracheo-Esophageal Fistula (rare)
- Cleft larynx
- Neuromuscular weakness
- Pulmonary Illness
 - Under developed lungs (BPD)
 - Pulmonary hypertension
 - Vocal cord paralysis
 - Pulmonary hypoplasia



Types of Pediatric Tracheostomy tubes used at Lurie

- Many types of tracheostomy tubes at Lurie Children's Hospital
- All have an obturator to assist with insertion
- Three stocked brands
 - Shiley – plastic
 - Bivona – silicone
 - Tracoe – plastic uncuffed and silicone line with many lengths available as stock
- Most patients requiring ventilation will have a cuffed trach tube
- Cleaning and reuse taught for home care (see instructions attached). Keep track of how many times each trach has been cleaned.



CUFFED TRACH TUBES

- Indications
- Contraindications
- Appropriate inflation volumes
- Water vs. air (no saline)
- Safety
 - Emergency syringe needs to be available at all times
 - Test cuff inflation prior to insertion
 - Decannulation/reinsertion
- Complications
 - Airway damage
 - Broken cuff/pilot balloon
 - Behavioral concerns

Tracheostomy Tubes with Inner Cannula

- Larger size plastic tracheostomy tubes will have an inner cannula
- Inner cannula is removed and cleaned 2-3 times daily and PRN
- Entire trach is typically changed monthly



MANAGEMENT OF TRACHEOSTOMY TUBE

- Patency
 - Frequent assessment
 - Suctioning
 - Humidity
- Prevent Infection
 - Trach care
 - Tie changes
 - Trach tube changes
- Family Teaching



Patency

- Airway patency is most important for these patients!
- Suction trach as needed to maintain patent airway
- Sterile technique is practiced in hospital; clean technique is used at home
- Suction trach tube at least every 8 hours and PRN
 - Time when suctioning should occur
 - After waking
 - With respiratory treatments
 - Before meals
 - Before leaving home
 - Before bedtime
 - As needed during the night
 - Patients may require more suctioning than described above based on needs

Suctioning

- Determine the depth of suctioning
 - Airway card /home plan of care with prescribed depth should come from Otolaryngology provider if available
 - Refer to suction depth chart (attached)
 - Insert suction catheter through trach tube until tip is even with the end of tube, and then ½ cm past tip of tube
 - Encourage patient to cough
 - Consider bagging patient after each suction pass if needed
 - 5-10 seconds
 - Suction trauma biggest risk
 - Patients on ventilators require manual breaths between each suction pass



INLINE SUCTION TECHNIQUE

- Indications for inline technique
 - Unable to tolerate seconds off ventilator
 - Usually due to high PEEP (> 10)
 - Patient desaturates when taken off vent for suctioning
 - Frequent suctioning (more than every 1-2 hours)
- Misconceptions
 - Cleaner than open technique
 - Easier than open technique
- Complications
 - Airway damage
 - Continue to use long after it is necessary

Name MRN:

Procedure MLB, excision suprastomal granuloma, tracheotomy tube measurement/upsized

Attending: Dr. Thompson

Emergency contact: in house on call pager

Airway plan:

- 4.0 PEDI Flex-Extend Bivona
- ESCALATION PLAN: If trach comes out – replace 4.0 PEDI flex-extend trach, if fails try 3.5 PEDI flex-extend trach, if fails try 4.0 ETT.
- 4.0 PEDI flex-extend Bivona and 3.5 PEDI flex-extend bivona should be at bedside.

Airway Medications:

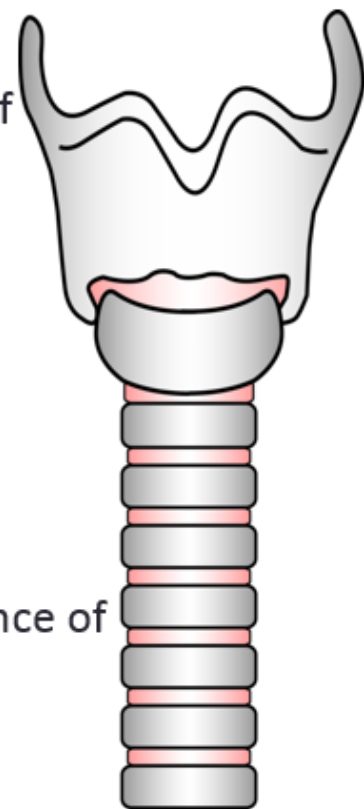
- Steroids per CCU

Suctioning: : suction q4hr and prn; suction to depth of 9cm

Oral Care: Oral rinse q 8 hours

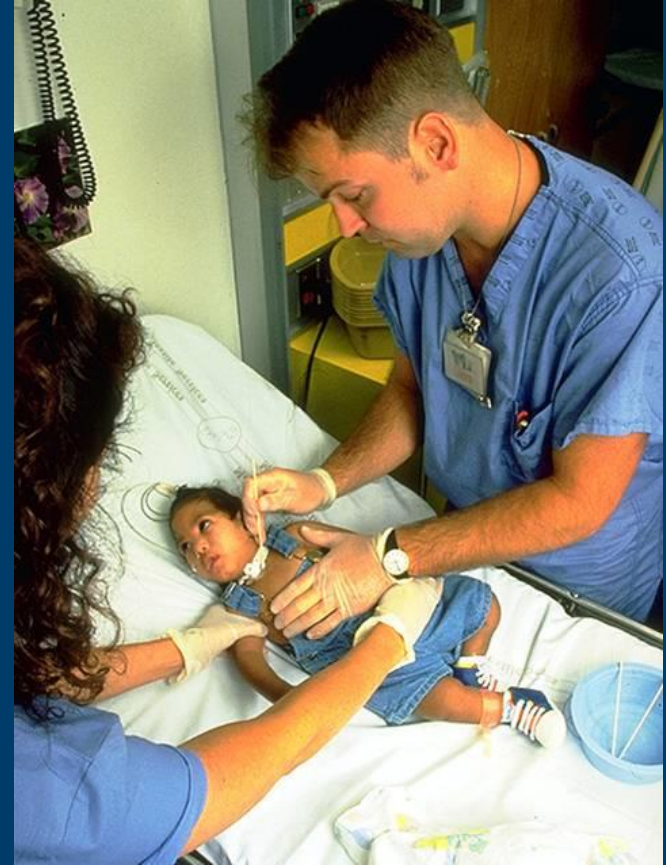
Acid Suppression: Acid suppression with PPI and H2 blocker

Follow-up Endoscopy: Will need repeat endoscopy in 2-3 weeks given presence of suprastomal granuloma



Skin Care

- Secretions from the trach can cause the skin to become red & sore
- Keep as dry as possible
- Inspect skin throughout the day
- Wash with mild soap minimally 2-3 times daily
- Rinse soap off completely & dry thoroughly
- No creams or ointments on skin unless prescribed by provider
- Discourage gauze dressings (unless indicated)
- Change ties daily



CHANGING THE TRACH TUBE

- Change trach tube every OTHER week unless ordered differently by provider
- Use 2 trained caregivers to change trach tube if possible
- Emergent trach tube change may need to occur with only 1 trained caregiver or home health nurse
- For cuffed trach tubes, check cuff for integrity prior to inflation
- May need to pre-oxygenate patients based on need

Most common stoma complications

Granulation Tissue

- Proliferation of tissue around stoma
- Unsure why some kids are more prone to develop this tissue vs others
- Risk factors include flextend Bivona, consistent pulling/pressure
- Not worrisome unless growing, irritated or obstructive to trach change
- Use of topical drops or ointments can be discontinued after a few courses if not helping
- Only other treatment is excision – in OR vs silver nitrate

Granuloma

- Firm, hard bump that can be painful and get red and irritated
- Typically don't shrink with topical medications but they can be helpful to make less irritated
- May need excision in OR during bronchoscopy
- If becomes infectious looking, may require oral/enteral antibiotic
- Like granulation tissue is not worrisome unless causing issues

EMERGENCY PREVENTION

- Close monitoring of patient
- Appropriate suctioning frequency
- Use heated humidity or HME
- Ensure trach ties are tight enough (1-2 fingers)
- Empty excess water in tubing

Emergency interventions

- Mucus Plug
 - More voice than usual
 - Whistling sounds from the tube
 - Unable to pass the catheter into the tube
 - No chest rise on vent or during manual breaths
 - Restlessness
 - Rapid breathing
 - Retractions
 - Cyanosis
- Dislodged trach
- Difficult reinsertion

Emergency Care

- Don't forget to breathe!
- **WORK QUICKLY BUT DO NOT PANIC**
- IF MUCUS PLUG IS SUSPECTED:
 - Instill 3-5 drops of normal saline to try to loosen mucus plug
 - Use open suction technique instead of inline
 - Change trach tube
 - Use self-inflating bag to provide manual breaths if needed



Emergency Care

IF YOU SUSPECT TRACH TUBE IS DISLODGED:

- Assess
 - Pull up on chin to expose stoma to see if tube is dislodged
 - Provide manual breaths via self-inflating bag to allow you to see if chest rises
 - Insert suction catheter into trach to determine if catheter passes to normal depth
- If tube is visibly dislodged, reinsert tube using obturator (not always necessary)

EMERGENCY CARE

IF THERE IS DIFFICULTY INSERTING TRACH :

- Make sure head is in correct position – needs to be midline with body and hyperextend neck
- Make sure you can see trach stoma!
- If tube will not go back in, use obturator and lubricant for easier insertion
- If tube still will not go in, try the step-down trach
- If this does not work, provide breaths directly to mouth and cover trach stoma (you can use self-inflating bag and face mask as well, but make sure trach stoma is covered). Call 911 – this is an emergency!!!
- If you need to use the step-down trach tube, make sure to notify ENT right away
 - the step-down trach tube should not stay in stoma longer than necessary

EMERGENCY EQUIPMENT

- **All tracheostomy patients must have an Emergency Equipment Bag whenever they leave their house**
 - Refer to the attached document for complete list of bag contents
 - Check ER bag contents before your child leaves the home to ensure all supplies are available
 - Bag is to be restocked by caregivers or home health nurses once supplies are removed



Communication

- Speaking
 - Covering trach tube periodically with finger or chin
 - Voice is usually not as strong
 - Some children speak automatically after airway opens enough for air to flow around tube & trap in vocal cords



Communication

- Passy-Muir Speaking Valve
 - Allows inhalation through trach tube
 - Exhalations through upper airway
 - Beneficial for achieving voice
 - Improves swallow function
 - Can be used inline with ventilator
- Tracoe Phon Assist 1 Speaking Valve
 - Adjustable valve
 - Same benefits as PMV but adjusts to allow for adjustable pressures
 - Cannot be used inline with ventilator



Communication

- Contraindications for speaking valve
 - Complete upper airway obstruction (grade 4 subglottic stenosis)
 - Craniofacial anomalies which prevent oral or pharyngeal air flow
 - The use of a tight fitting trach or does not tolerating cuff deflation
 - Bilateral vocal cord paralysis
 - Reactive airway disease requiring more than q 3 hour treatments
 - Absence of a swallow reflex
 - Child that is unconscious or medically unstable



Communication

- Insurance only covers one every 3 mos – need to clean and reuse!! (Tracoe valve not covered for replacement at this time. Ask SLP for replacement.)
- Advantages to wearing a Passy-Muir Speaking Valve
 - Facilitates upper airway breathing
 - Decreases oral/nasal secretions
 - Improves expectoration
 - Improves olfaction & appetite
 - Improves swallow function
 - Improves voice quality, intensity, pitch & intonation
 - Allows for vocalization, babbling or speech production
 - Encourages increased communication
 - Eliminates finger occlusion
 - Decreases child's frustration



ANY QUESTIONS?

IF NOT, GOODBYE
and THANK YOU!!

